Remarks/Arguments:

Claims 1-3, 13-21, 25, 30-34, 36 and 38-47 are pending in the application. Claims 1, 2, 13-21, 25, 30-34, 36-38, 40, 41 and 43-47 are rejected and claims 3, 39 and 42 are objected to. With this amendment, claims 1, 36, 39, 41 and 43 are amended, and claim 48 is newly added.

Support for the amendments to independent claims 1, 36, 39, 41 and 43 can be found, for example, in the originally filed application at page 6, lines 14-15 and page 8, lines 11-12. Support for newly added claim 48 is found, for example, in the originally filed application at page 5, lines 18-20. No new matter has been added.

Claim 39 stands objected to. Applicants have amended claim 39 to depend from claim 36, as suggested by the Office. Applicants submit that the rejection is overcome.

Claims 1, 13-21, 25, 34, 36-38, 40, 41 and 43-47 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,912,847 ("Deeba"). Claims 2, 32, 30, 31 and 33 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Deeba as applied to claims 1 and 36, respectively, in view of legal precedent. Applicants respectfully submit that the currently pending amended claims are patentable over these cited references for at least the reasons set forth below.

Features of the Independent Claims

Applicants' invention, as recited in independent claim 1, includes at least the following features that are neither disclosed nor suggested by Deeba, namely:

> a compression ignition engine configured to operate in ***a first, normal running mode to produce exhaust gas***, and in ***a second mode, wherein when operating in the second mode the engine produces an exhaust gas comprising an increased level of carbon monoxide (CO) relative to the exhaust gas produced in the first mode***;

means to switch engine operation between the two modes in response to at least one of exhaust gas temperature, catalyst bed temperature or, if a filter is present, a need to regenerate the filter . . . (emphasis added).

Claims 36, 41 and 43, while not identical to independent claim 1, include features similar to claim 1.

With regard to claim 47, claim 47 includes at least the following features that are neither disclosed nor suggested by Deeba, namely:

a compression ignition engine operable in ***a first, normal running mode to produce exhaust gas***, and operable in ***a second mode, which second mode produces an exhaust gas comprising an increased level of carbon monoxide (CO) relative to the exhaust gas produced in the first mode*** . . .

the exhaust system comprising a catalysed component comprising ***(1) a first substrate comprising a first filter and a palladium (Pd) catalyst supported on a first support material associated with at least one base metal promoter and (2) a second substrate comprising a second filter and a platinum (Pt) catalyst*** (emphasis added).

Response to Rejections

The Office rejects independent claim 1 as obvious over Deeba. In part, Applicants' invention, as recited in independent claim 1, includes "a compression ignition engine configured to operate in a first, normal running mode to produce exhaust gas, and in a second mode, wherein when operating in the second mode the engine produces an exhaust gas comprising an increased level of carbon monoxide (CO) relative to the exhaust gas produced in the first mode." The Office compares Applicants' claimed normal running mode to a "low load mode" and the second running mode to "high load mode or high temperature mode." (Office Action, page 3). The Office concedes, however, that Deeba "fails to disclose that the second mode produces an exhaust gas comprising an increased level of carbon monoxide (CO) relative to the exhaust gas produced in the first mode." The Office alleges, however, at pages 3-4, that

> [i]t is well known to those with ordinary skill in the art that in a typical diesel engine such as the one in Deeba, an engine air-fuel ratio during a high engine load condition is at a lower value than that during a low engine load condition, wherein the lower value air-fuel ratio indicates a larger fuel amount relative to an air amount. Because of this, a CO level for a diesel engine during a high engine load is larger than a CO level during a low engine load. Thus, such disclosure by Deeba is notoriously well known in the art so as to be proper for official notice.

Contrary to the Office's assertions, Applicants submit that the Office has mischaracterized Deeba and that which was allegedly known to one of ordinary skill in the art to be under official notice. The Office has therefore failed to establish a *prima facie* case of obviousness.

I. The Office's Taking of Official Notice Is Improper

The Office admits that Deeba fails to disclose that it has a second running mode that produces an exhaust gas comprising an increased level of carbon monoxide (CO) relative to the exhaust gas produced in the first mode, i.e. normal running mode. To supply this missing feature, the Office takes official notice as fact that a CO level for a diesel engine during a high engine load is larger than a CO level during a low engine load.

According to the M.P.E.P., "[o]fficial notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. As noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be 'capable of such instant and unquestionable demonstration as to defy dispute' (citing *In re Knapp Monarch Co.*, 296 F.2d 230, 132 USPQ 6 (CCPA 1961))." M.P.E.P. § 2144.03(A). Here, Applicants traverse the Office's alleged fact upon which official notice is taken. Applicants contend that the Office's position is not only unsupported by any evidence, but it is a blanket assertion that is not an accurate characterization of what was "notoriously well known" in the art. In fact, it runs counter to what was known in at least typical operating conditions in typical diesel engines of the relationship between CO emissions at low engine loads and CO emissions at high engine loads.

As established in the enclosed Declaration under 37 C.F.R. §1.132, Applicants submit that the Office's contention regarding the CO emissions for a diesel engine during a high engine load is not necessarily larger than a CO level during a low engine load. Rather, as shown in Figure 1 of the enclosed Declaration, the CO emissions decrease over much of a typical diesel engine's Base Emissions of CO versus Torque curve at increased torque (Nm), or load. Figure 2, which also illustrates the CO emissions at increasing engine loads, is consistent with Figure 1. As illustrated in Figures 1 and 2, the CO emissions decrease as the torque, or engine load, increases. In Figures 1 and 2, speed is held constant for each line of data points, thus, the only way to increase torque (Nm), or engine load, is to reduce the air-fuel ratio, i.e. introduce more fuel into the engine.

As set forth in the Declaration, Applicants submit that as the combustion efficiency (i.e. the relative amount of conversion of carbon from the hydrocarbon fuel into carbon dioxide, compared to partially combusted species) of the engine improves, CO emissions decrease. As a result, the CO emissions initially decrease as the torque, or engine load, increases, as shown in Figures 1 and 2. Thus, Applicants submit that the Office's conclusion that "a CO level for a diesel engine during a high engine load is larger than a CO level during a low engine load . . . is notoriously well known in the art as to be proper for official notice" is improper. One of ordinary skill in the art would not have expected that CO emissions increase across the entire data range of torques. Applicants submit, therefore, that it cannot be inferred that for a typical diesel engine, such as the one disclosed in Deeba, operating over such a torque range, that an incremental increase in torque would cause an increase in CO emissions.

Applicants acknowledge that there are maximum peak load conditions in which the CO emissions are higher at a higher load than at a lower load. However, such peak load conditions are atypical of the normal operation of typical diesel engines, such as those disclosed in Deeba. And it is only at or near the extreme condition of maximum peak load that the Office's assertion about CO emissions holds water. At less than maximum peak load in the normal operating range, the statement is not true, and is, in fact, the converse.

Applicants submit, therefore, that the Office's assertion as it relates to the CO level between a low engine load and a high engine load is not accurate, and thus not proper for official notice. As shown in the Declaration, the CO level depends on the combustion efficiency of the engine and is typically lower at higher engine loads.

Because the Office's position that a CO level for a diesel engine during a high engine load is larger than a CO level during a low engine load is not only improperly supported for taking official notice, but is also not true as the Office asserts, Applicants submit that the Office has failed to establish a *prima facie* case of obviousness with respect to independent claims 1, 36, 41, 43 and 47.

Furthermore, the claims dependent on independent claims 1, 36, 41, 43 are also patentable for at least the reasons that claims 1, 36, 41, and 43, but may be separately patentable for additional reasons as well.

II. Deeba Fails to Disclose Or Suggest The Feature of "means to switch engine operation between the two modes in response to at least one of exhaust gas temperature, catalyst bed temperature or, if a filter is present, a need to regenerate the filter"

The Office asserts that Deeba discloses the feature of independent claim 1 of "means (fuel injector not shown but obviously must have) to switch engine operation between the two modes[)]." (Office Action, page 3). Applicants submit that as a preliminary matter, the Office's mere conclusion that "fuel injector not shown but obviously must have" fails to provide the requisite "clear articulation of the reason(s) why the claimed invention would have been obvious." See M.P.E.P. § 2142. Further, as the M.P.E.P. sets forth,

> rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR*, 550 U.S. at ___ , 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval) M.P.E.P. § 2142.

Applicants submit that for this reason alone, the Office has failed to establish a *prima facie* case of obviousness.

Notwithstanding, in contrast to Deeba, Applicants submit that claim 1 includes the feature, "means to switch engine operation between the two modes in response to at least one of exhaust gas temperature, catalyst bed temperature or, if a filter is present, a need to regenerate the filter." This is distinguishable over Deeba.

More specifically, as recited in claim 1, Applicants' second running mode "produces an exhaust gas comprising an increased level of carbon monoxide (CO) relative to the exhaust gas produced in the first mode. . . ." The engine is switched from a normal running mode to the second running mode in response to at least one of exhaust gas temperature, catalyst bed temperature, or, if a filter is present, a need to regenerate the filter. The means to switch is thus independent of, or not dependent on, a demand for more fuel or load on the vehicle. The second running mode, as recited in claim 1, responds to conditions regardless of load and could be described as a "combustion" mode, i.e. how the engine responds to the demand for more fuel or to compensate for different loads. The engine, in other words, changes combustion conditions in response to at least one of exhaust gas temperature, catalyst bed temperature, or, if a filter is present, a need to regenerate the filter.

Deeba, in contrast, fails to teach, disclose or suggest a means to switch as recited in claim 1. The only "means to switch" the Office asserts is the fuel injector that is not shown or disclosed in Deeba, but which Deeba "obviously must have." Such a fuel injector switches from low engine load to high engine load by injecting fuel. Thus, the means to switch as asserted by the Office merely switches from low engine load to high engine load based only on the demand on the engine due to increased load. It does not, however, switch modes in response to at least one of exhaust gas temperature, catalyst bed temperature, or, if a filter is present, a need to regenerate the filter. As such, Applicants submit that independent claim 1 is patentable over Deeba.

Similarly, independent claims 36, 41 and 43 include features similar to those discussed above with respect to claim 1. For at least the reasons that claim 1 is patentable, claims 36, 41 and 43 are also, therefore, patentable.

Furthermore, the claims dependent on independent claims 1, 36, 41, 43 are also patentable for at least the reasons that claims 1, 36, 41, and 43, but may be separately patentable for additional reasons as well.

III. Deeba Fails to Render Obvious Independent Claim 47

Notwithstanding the Office's improper position in taking Official Notice, as discussed in Section I above, Applicants submit that claim 47 is further distinguishable over Deeba. Claim 47 recites the features of: (1) a first substrate comprising a first filter and a palladium (Pd) catalyst supported on a first support material associated with at least one base metal promoter and (2) a second substrate comprising a second filter and a platinum (Pt) catalyst. Deeba, in contrast, fails to disclose both a Pd catalyst and a Pt catalyst, each on a separate filter. Rather, Deeba discloses (1) a diesel oxidation catalyst of trap material and platinum group metals deposited on suitable flow through carriers, and (2) wallflow filters that contain catalytic agents including platinum on the catalyst support. (Deeba, at col. 7, lines 24-29 and col. 8, lines 38-46). Thus, Deeba fails to disclose each of its catalysts on a separate filter. For this additional reason, claim 47 is patentable over Deeba.

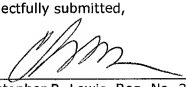
IV. Deeba in view of Legal Precedent Fails to Render Obvious the Pending Claims

Claims 2, 32 and 30, 31 and 33 stand rejected as obvious over Deeba in view of legal precedent. Regarding the obviousness rejections of these dependent claims, based on Deeba in view of legal precedent, citing to *In re Aller*, because the legal precedent fails to teach the shortcomings of Deeba, as discussed above, Applicants submit that these claims are neither taught nor suggested by Deeba in view of legal precedent. The obviousness rejections are respectfully requested to be withdrawn.

Conclusion

In view of the amendments and arguments set forth above, Applicants submit that the pending application is in condition for allowance. Notice to this effect is earnestly solicited.

Respectfully submitted,



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Attachment: Declaration under 37 C.F.R. §1.132

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